BROOKHAVEN NATIONAL LABORATORY

Work Permit # DRL-2013_15
Work Order # ___
Job# ___ Activity# ___

See "Instructions for Filling out the Work Permit" contained in the Work Planning and Control for Experiments and Operations Subject Area.

1. Work request WCC fills out this section. ☐ **Standing Work Permit**

Requester: Don Lynch	Date: 12/12/13	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Carter Biggs			Ext.: 7515
Work Control Coordinator: Don Lynch		Start Date: 12/13/2013	Est. End Date: 2/11//2014
Brief Description of Work: End of 2013 Shutdown & Prep for Run 14 Startup Tasks			
Building: 1008	Room: IR	Equipment: MuID Collar Support Area	Service Provider: Carpenters and PHENIX Technicians

2. WCC, Requester/Designee, Service Provider, and ESS&H (as necessary) fill out this section or attach analysis

ESS&H ANALYSIS

Radiation Concerns	☒ None	☐ Activation	☐ Airborne	☐ Contamination	☐ Radiation	☐ NORM	☐ Other
☐ Special nuclear materials involved, notify Isotope Special Materials Group			☐ Fissionable/Radiological materials involved, notify Laboratory Nuclear Safety Officer				
Radiation Generating Devices:	☐ Radiography	☐ Moisture Density Gauges	☐ Soil Density Gauges	☐ X-ray Equipment			

Safety and Security Concerns	☒ None	☐ Explosives	☐ Transport of Haz/Rad Material	☒ Pressurized Systems
☐ Adding/Removing Walls or Roofs	☐ Critical Lift	☐ Fumes/Mist/Dust*	☐ Magnetic Fields*	☐ Railroad Work
☐ Asbestos*	☐ Cryogenic	☐ Heat/Cold Stress	☐ Nanomaterials/particles*	☒ Rigging
☐ Beryllium*	☒ Electrical	☐ Hydraulic	☐ Noise*	☐ Silica*
☐ Biohazard*	☐ Elevated Work	☐ Lasers*	☐ Non-ionizing Radiation*	☐ Security Concerns
☐ Chemicals/Corrosives*	☐ Excavation	☐ Lead*	☐ Oxygen Deficiency*	☐ Suspect/Counterfeit Items
☐ Confined Space*	☐ Ergonomics*	☒ Material Handling	☐ Penetrating Fire Walls	☐ Vacuum
* Safety Health Rep. Review Required	☐ Haz, Rad, Bio Material Exceed DOE 151.1-C Levels - Contact OEM			☐ Other

Environmental Concerns	☒ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad)	☐ Land Use Institutional Controls	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use	☐ Liquid Discharges	☐ Waste-Clean	☐ Waste-Radioactive
☐ Cesspools (UIC)	☐ Oil/PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption	☐ Spill potential	☐ Waste-Industrial	☐ Underground Duct/Piping
Waste disposition by:			☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity:	☒ No ☐ Yes		

FACILITY CONCERNS	☒ None	☐ Intermittent Energy Release		
☐ Access/Egress Limitations	☐ Electrical Noise	☐ Potential to Cause a False Alarm		☐ Vibrations
	☐ Impacts Facility Use Agreement		☐ Temperature Change	☐ Other
☐ Configuration Management	☐ Maintenance Work on Ventilation Systems		☐ Utility Interruptions	

WORK CONTROLS

Work Practices

☐ None	☐ Exhaust Ventilation	☒ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☒ Back-up Person/Watch	☐ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☒ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. "high level")	☐ Electrical Inspection Required

Personal Protective Equipment

☐ None	☐ Ear Plugs	☒ Gloves as appropriate	☐ Lab Coat	☒ Safety Glasses as appropriate
☐ Coveralls	☐ Ear Muffs	☐ Goggles	☐ Respirator*	☐ Safety Harness

☐ Disposable Clothing	☐ Face Shield	☐ Hard Hat	☐ Shoe Covers	☒ Safety Shoes	☐ High visibility cloths/vest	☐ Other

Permits Required (Permits must be valid when job is scheduled.)

☒ None	☐ Cutting/Welding	☐ Impair Fire Protection Systems
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other

Dosimetry/Monitoring

☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump	

Training Requirements (List specific training requirements)

C-A User or equiv. , PHENIX Awareness, Rigging, Electrical Safety as appropriate

Based on analysis above, the Review Team determines the risk, complexity, and coordination ratings below:				**If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)**	
ESS&H Risk Level:	☒ Low	☐ Moderate	☐ High	WCC: Don Lynch	Date:
Complexity Level:	☒ Low	☐ Moderate	☐ High	Service Provider:	Date:
Work Coordination:	☒ Low	☐ Moderate	☐ High	Authorization to start Don Lynch	Date:
				(Department/Division, or their equivalent, Sup/WCC/Designee)	

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, scheduling, coordination, notifications, and personnel availability need to be addressed in adequate detail): See Attached
Special Working Conditions Required (e.g., Industrial Hygiene hold points or other monitoring) None
Notifications to operations and Operational Limits Requirements: None
Post Work Testing, Notification or Documentation Required:

Job Safety Analysis Required: ☐ Yes ☒ No	Review Done: ☒ in series ☐ team

Reviewed by: * Primary Reviewer signature means that the Review Team members were appropriate for the work that was planned, the Team visited the job site, hazards and risks that could impact ESS&H have been considered and controls established according to BNL requirements. In addition, this signature indicates that applicable JRAs, FRAs, as well as other planning documents have been reviewed and training requirements have been identified and recorded on this permit.

Title	Name (print)	Signature	Life #	Date
ES&H Professional				
F&O Facility Project Manager				
Service Provider				
Work Control Coordinator	Don Lynch		20146	
Safety Health Representative				
Research Space Manager				
Other				
Other (PHENIX Escort)				
Required Walkdown Completed				
*Primary Reviewer				

4. Job site personnel (Supervisor and workers) fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments) and all training required for this permit is current/complete. Job Supervisor/Contractor Supervisor signatures also includes verification that worker training required for this permit is current/complete.

Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:

Workers are encouraged to provide feedback on ESS&H concerns or on ideas for improved job work flow. Use feedback form or space below.

5. Department/Division, or their equivalent, Line Manager or Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)

Name:	Signature:	Life#:	Date:

6. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Are there any changes as a result of worker feedback? ☐ Yes ☐ No

Note: See Work Planning and Control for Experiments and Operations Subject Area section 2.6.

7. Post Job Review/Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of job site to work supervisor.) The WCC ensures that the change process to update drawings, placards, postings, procedures, etc., is initiated, if necessary.

Name:	Signature:	Life#:	Date:
Comments:			

WP #: DRL-2013-15

PHENIX Preparations for Start of Run Checklist, December 2013 until ready for Run 14

Introduction

The standard preparation-for-start-of-run tasks are to be performed in precisely the order indicated in the sequence of operations section below. These tasks are to be performed in accordance with relevant PHENIX Procedures (where indicated) or otherwise best practices in accordance with BNL standards and training for "worker planned work", as appropriate. These tasks are to be accomplished in accordance with the latest startup preparation schedule as indicated in the current PHENIX technical support weekly planning meeting (see PHENIX Internal web site, systems engineering page for latest information). **PHENIX technicians shall make certain that all of their required training is up to date, all equipment requiring certifications and/or calibration is up to date, and that all other equipment and tools are operating within normal operating parameters and in accordance with all BNL, CAD and PHENIX safety requirements**.

BNL technicians and engineers shall also make certain that all non-BNL personnel working at PHENIX during the 2013 preparation for run 14 are appropriately trained for the tasks they will be performing, that all tasks have been properly reviewed and planned, and that all required permits are in place prior to commencement of such tasks.

(**Note**: There may be other work associated with operation, testing, maintenance, repair and upgrade of PHENIX detector systems and infrastructure being undertaken during the several weeks prior to COMMENCEMENT OF RUN 14. Such work may continue subject to the direction of PHENIX engineering and work coordinators. **In the event that such work conflicts and/or might lead to a potentially unsafe condition, either the work being performed under this work permit or the conflicting work will be temporarily interrupted as determined to be most appropriate by PHENIX engineering and work coordinators**. Such other work shall be planned and coordinated, as appropriate, in separate work planning documentation.)

Abbreviations

AH – Assembly Hall
CAD – Collider-Accelerator Division
CM – Central Magnet
EC - East Carriage
IR – Interaction Region
MMN – North Muon Magnet
MMS - South Muon Magnet
MuID – Muon Identifier detector subsystem

TOF – Time of Flight detector subsystem
WC – West Carriage

Sequence of Operations

1. Prepare IR for East Carriage Roll-in

    a. Move the CM to its home (run) position (PHENIX Techs, PP-2.5.5.1-01, PP-2.5.5.2-01)

    b. Connect CM magnet water cooling and magnet leads (CAD Techs)

    c. Move MuID collars into docking position adjacent to northeast end of south MuID panels (PHENIX Techs)

    d. Remove manlifts from IR (PHENIX Techs)

    e. Remove aluminum plates from IR (PHENIX Techs)

    f. Remove 12 ton cart from IR to AH (PHENIX Techs)

    g. Remove cart tracks from IR to AH

2. (These tasks are independent of task 1 and subtasks and may be performed simultaneously.) Prepare EC to move into AH.

    a. Disconnect shutdown temporary water, elect and fiber connections from EC (PHENIX Techs, PP-2.5.5.2-04)

    b. Fold and stow EC yellow platforms and handrails in preparation for move to IR (BNL Carpenters and Riggers under CAD engineering supervision)

    c. Make sure all potentially interfering items and debris are removed from EC path. (PHENIX Techs)

3. Move the EC to the IR. (PP-2.5.5.1-01, PP-2.5.5.2-01)

4. Re-connect gas sniffers, water, elect., gas, fibers.

5. Install the MuID Collars (PP-2.5.5.4-25)

6. Un-Fold the EC platforms, re-install safety rails and reinstall the EC material lift and ladder (BNL Carpenters and Riggers under CAD engineering supervision).

7. Restore all PHENIX electronics currently in summer shutdown safe modes to operating modes.

8. Re-connect EC lift wiring and TOF blower wiring (PHENIX electrician).

9. Assemble large rolling shield wall and base (BNL Riggers under CAD engineering supervision).

10. Close large rolling shield wall (PHENIX Techs, PP-2.5.5.2-02)

11. Request re-installation of radiation interlocks by CAD liaison engineer.

12. Perform magnet tests. (CAD Techs under CAD engineering supervision) (This step may be performed at any time after magnet leads and water cooling have been re-installed.)

13. Perform electrical, magnet and safety system checkout in accordance with CAD and PHENIX blue, pink and white checklist sheets. (PHENIX and CAD Engineers and Technicians in accordance with procedures referenced on checklist sheets.)

14. Start Watch shifts (PHENIX Run Coordinator)

15. Start Flammable Gas flow (PHENIX Technicians in accordance with Gas system operation procedures for each applicable detector subsystem.)

16. Detector subsystem commissioning (PHENIX Collaboration scientists in accordance with appropriate subsystem operating procedures.)

17. Ready for Run 14

Specific tasks for the preparation of the PHENIX Detector Complex for Run 14 not covered herein start shall be individually evaluated for training requirements, permit requirements and planned in accordance with BNL standard practices.